Claims:

1. A method for atomizing metal melts, in which the liquid metal bath is sprayed from a tundish via an outlet opening by the aid of a gas into a cooling chamber, or onto a surface to be coated while compacting the comminuted particles by the aid of a propellant, characterized in that the liquid metal melt via an annular gap is introduced into the outlet opening, into which a hot gas having a temperature of between 250°C and 1300°C and a supercritical pressure of between 2 and 30 bars is ejected through a Laval nozzle concentrically with said opening, and that the hot gas is contacted with the melt bath at a speed exceeding supersonic speed, with a radial outwardly directed component or with a twist.

2. A method according to claim 1, characterized in that the hot gas is ejected via a deflector body.

3. A method according to claim 1 or 2, characterized in that a lance comprising the Laval nozzle for the hot gas is conducted concentrically in a tube while forming an annular space, and that reactive gases such as, e.g., CO, H_2, O_2 or H_2O vapor, and/or inert gases such as, e.g., N_2 or Ar, and/or carbides such as, e.g., WC, TiC or VC, are sucked in via said annular space.

4. A method according to claim 3, characterized in that reactive metal powders or additives such as, e.g., SiC, Al_2O_3 or Y_2O_3 are charged into the gas flow sucked in.

5. A method according to any one of claims 1 to 4, characterized in that the hot gas is heated in a heat exchanger surrounding the melt particles ejected.

6. A method according to any one of claims 1 to 5, characterized in that extremely fine particles of the solidifying melt, which ascend within the cooling chamber, are sucked off below the entry of the melt flow and discharged via a sluice.

7. A method according to any one of claims 1 to 6, characterized in that a pressure of 1.5 to 25 bars is maintained within the tundish.

8. A method according to any one of claims 1 to 7, characterized in that a pressure of 1.5 to 10 bars is maintained within the cooling chamber.

9. A device for carrying out the method according to any one of claims 1 to 8, including a melt tundish (1) and an immersion tube (4) immersed in the melt (2) while forming an annular gap surrounding the outlet opening for the melt (2) and a lance (7) for the ejection of a propellant gas, characterized in that the height-adjustable lance (7) carries a Laval nozzle (9).

10. A device according to claim 9, characterized in that a deflector body (10) is arranged in a height-adjustable manner in the widening opening region of the Laval nozzle (9) or following thereupon, viewed in the flow direction, the clear cross section between the nozzle (9) and the deflector body (10) being designed to increase in the axial direction towards the outlet end and to be larger than the narrowest cross section of the Laval nozzle (9).

11. A device according to claim 9 or 10, characterized in that the lance (7) opens in the outlet opening of the tundish (1) below the lower edge of the immersion tube (4).

12. A device according to any one of claims 9 to 11, characterized in that the outer diameter of the lance (7) is smaller than the clear diameter of the immersion tube (4) and the lance (7) is sealingly guided through a lid (6) of the immersion tube (4), and that a duct (24) for the supply of gases and/or reactive metal powders and/or additives opens into the space of the immersion tube (4) surrounding the lance (7).

13. A device according to any one of claims 9 to 10, characterized in that the deflector body (10) is designed as a cone having deflector surfaces provided on its jacket.

14. A device according to claim 13, characterized in that the deflector surfaces extend in an S-likely curved manner and, in the peripheral direction, terminate so as to be directed at the tangent of the base circle of the conical body each under the same angle.